

PATENT  
5858-01800 SR 2002/30 US

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Serial No. 10/875,888  
Confirmation No. 8916

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02/11/2008 /Pamela Gerik/  
Date Pamela Gerik

**REPLY BRIEF**

Sir/Madam:

This paper is submitted in reply to the Examiner's Answer mailed December 10, 2007.

**Rejection of Claims 9-12 and 14-16**

With regard to the patentability of claims 9-12 and 14-16, the Appellant presented arguments in the Appeal Brief explaining why one skilled in the art would not be motivated to combine the teachings of Guempelein and Kadous, as suggested by the Examiner in the final Office Action. In addition, Appellants noted substantial differences between the improperly combined references and the claims at issue to show that a *prima facie* case of obviousness had not been met. *See*, pages 5-9 of the Appeal Brief for Appellant's complete argument.

In his answer, the Examiner maintains the allegation that motivation exists within Kadous to make the proposed combination and that the combined teachings of the cited art read upon all limitations of independent claims 9, 10 and 16. For instance, the Examiner admits that Guempelein differs from the claimed invention by failing to disclose "an evaluation means comprising a micro controller and memory coupled to the receiver for measuring a value

corresponding to an operating characteristic of a transmission path between the transmitter and receiver; and a controller coupled to the data source for receiving the value from the micro controller, and to modify the data rate depending on whether the value differs from a desired value” (Examiner’s Answer, page 4). However, the Examiner alleges that these elements are readily supplied by “the controlling means of Kadous” and that it would have been obvious to incorporate the controlling means of Kadous into the system of Guempelein to maximize the data rate that may be reliably transmitted over the transmission medium between the data source and the data receiver (Examiner’s Answer, pages 4–5 and 11–12). The Appellants respectfully disagree.

**Applicants contend that there is no motivation or reason to combine the cited art references.** On pages 6-8 of the Appeal Brief, the Appellants provided reasons as to why a skilled artisan would not be motivated to combine the wireless system of Kadous with the optical system of Guempelein. In response to Appellant’s arguments, the Examiner suggests that Kadous provides motivation for the combination by briefly mentioning that the “data, instructions, commands, information, signals, bits symbols and chips ... referenced throughout the above description may be represented by voltages, currents, electromagnetic waves, magnetic fields or particles, **optical fields** or particles, or any combination thereof.” (Examiner’s Answer, page 12, citing ¶ 0129 of Kadous). The Examiner assumes that the wireless communication system of Kadous is an optical communication system, since Kadous briefly mentions that the information and signals may be represented by optical fields (Examiner’s Answer, page 13). This is an incorrect assumption.

Kadous discloses techniques for determining a data transmission rate in an orthogonal frequency division multiplex (OFDM) communication system (Kadous, Abstract). Although OFDM modulation techniques are commonly used in radio communication systems (such as the one disclosed by Kadous), the Examiner fails to provide evidence to support the allegation that the OFDM technique disclosed by Kadous could have been successfully incorporated within an optical communication system at the time the invention was made. Making a blanket statement about optical fields does not provide the reasonable expectation of success necessary to support a *prima facie* case obviousness against the current claims. See, MPEP 2143 and 2143.02, which

state that the reasonable expectation of success must be found in the prior art, and not based on applicant's disclosure, and that the predictability of success must be determined at the time the invention was made. As such, Appellants contend that insufficient motivation exists for the proposed combination.

The Examiner seems to recognize the lack of clear teaching or motivation within Kadous for implementing OFDM within an optical communication system. For example, the Examiner alleges that, even if Kadous were a non-optical transmission system, one of ordinary skill in the art could still apply the teaching of signal controlling to an optical communication system. The Examiner supports of such allegation by citing the recent U.S. Supreme Court decision in *KSR Int'l Co. v. Teleflex, Inc.* (U.S. 2007), which states, “[c]ommon sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” The Appellants respectfully disagree and maintain that Kadous and Guempelein are improperly combined.

The systems and methods disclosed by Kadous for selecting a data transmission rate are understood to relate to radio transmissions. While Kadous indicates that the signals may be optical, the systems and methods disclosed by Kadous specifically relate to OFDM (Kadous, Title), a modulation technique tailored to reduce radio frequency interference across multiple communication channels. However, interference in radio transmissions is fundamentally different from interference in optical transmissions. Thus, techniques used for reducing interference in radio communication systems are generally not appropriate for optical systems. The teachings of Kadous do not indicate to a skilled artisan that an OFDM technique could be implemented within an optical communication system with a reasonable expectation of success. Without a reasonable expectation of success, one skilled in the art would not be motivated to make the proposed combination.

Obviousness does not require absolute predictability, however, at least some degree of predictability is required. Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness. *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976), MPEP 2143.02.

**Applicants further contend that, even if the references are improperly combined, the combined teachings of the cited art still fail to disclose all limitations of the present claims.** On page 9 of the Appeal Brief, the Appellants explained that the cited references would still fail to disclose all limitations of present claims 9, 10, and 16, even if improperly combined. For example, the Appellants pointed out that Guempelein and Kadous both fail to provide teaching, suggestion or motivation for measuring a value corresponding to an operating characteristic of the transmission path and for modifying a data rate or package size if the measured value differs from a desired value.

In his answer, the Examiner maintains the allegation that the “combination of Geumpelein and Kadous discloses each and every limitation cited in claims 9, 10 and 16” because Kadous suggests that the data rate “can be modified based on... a value (for example, SNR) of an operating characteristic of a transmission path” (Examiner’s Answer, page 16). The Appellants respectfully disagree.

Contrary to the presently claimed case, the data rate selection system described by Kadous does not modify a data rate or package size if a measured value corresponding to an operating characteristic of the transmission path differs from a desired value. Instead, Kadous describes a highly complicated rate selection system and method for determining a suitable rate based on “estimates of one or more characteristics of the communication channel,” such as channel response and noise variance (Kadous, ¶ 0025). Once rate selector 166 receives the estimates (i.e., channel response and noise variance) from channel estimator 164, the estimates are input into a summing function (Eq. 3) to provide an “estimate of the SNR” required for transmitting an equivalent data rate ( $D_{equiv}$ ) over the transmission path using a particular modulation scheme ( $M(k)$ ) (Kadous, ¶¶ 0041-0045, 0067). Next, Kadous determines whether the equivalent data rate is supported by determining whether the estimated SNR is greater than or

equal to a threshold SNR, which was previously “determined by computer simulation or some other means” (Kadous, ¶¶ 0042, 0068). The data rate is selected for use, if the estimated SNR is greater than or equal to the threshold SNR (Kadous, ¶¶ 0042, 0069). If the equivalent data rate is not deemed to be supported, Kadous progresses to the next lower available data rate, and the evaluation process repeats itself (Kadous, ¶ 0069). Thus, Kadous discloses a highly complicated, iterative scheme for selecting a suitable data rate.

Contrary to statements in the Examiner’s Answer, Kadous does not measure a SNR of a transmission path. Instead, and as mentioned above, Kadous uses estimates of the transmission path (such as channel frequency response and noise variance) to estimate a SNR for the transmission path. A data rate corresponding to the estimated SNR may be selected for use, if the estimated SNR is greater than or equal to a threshold SNR.

The complicated rate selection scheme disclosed by Kadous is altogether different from the devices described in claims 9 and 10, and the method of claim 16, which measure a value corresponding to an operating characteristic of the transmission path and modify the data rate if the measured value differs from a desired value. Kadous fails to teach or suggest that data rate selection may be performed by comparing measured values to desired values and modifying the data rate if the measured values differ from the desired values. For at least the reasons set forth in the Appeal Brief and those provided above, Appellants believe that independent claims 9, 10, and 16 are patentably distinct over the cited art. In addition, dependent claims 11-15 are believed to be patentably distinct for at least the same reasons as their respective base claim.

For the foregoing reasons and those discussed in the Appeal Brief, it is submitted that the Examiner’s rejection of and objection to pending claims 9-16 was erroneous, and reversal of the Examiner’s decision is respectfully requested.

The Commissioner is hereby authorized to charge the required fee(s) or credit any overpayment to Daffer McDaniel, LLP deposit account number 50-3268.

Respectfully submitted,

/Kevin L. Daffer/

Kevin L. Daffer

Reg. No. 34,146

Attorney for Appellant

Customer No. 35617

Date: February 11, 2008

JMF/AJP